SEQUENCE LISTING

<110> Toni R. Prezant (Inventor)
Shlomo Melmed (Inventor)
Anthony P. Heaney (Inventor)

<120> METHOD OF REGULATING BIOLOGICAL ACTIVITY
OF PITUITARY TUMOR TRANSFORMING GENE (PTTG)1 USING PTTG2

<130> 18810-81401

<140> US UNASSIGNED
<141> 2001-05-11

<150> US 09/777,422
<151> 2001-02-05

<150> US 09/730,469
<151> 2000-12-04

<150> US 09/687,911
<151> 2000-10-13

<150> US 09/569,956
<151> 2000-05-12

<150> US 08/894,251
<151> 1999-07-23

<150> PCT/US86/21463
<151> 1997-11-21

<150> US 60/031,338
<151> 1996-11-21

<160> 68

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 974
<212> DNA
<213> Rattus rattus

<400> 1
aattcggcac gagccaacct tgagcatctg atcctcttgg cttctccttc ctatcgctga 60
gctggtaggc tggagacagt tgtttgggtg ccaacatcaa caaacgattt ctgtagttta 120
gcgtttatga ccctggcgtg aagatttaag gtctggatta agcctgttga cttctccagc 180
tacttctaaa tttttgtgca taggtgctct ggtctctgtt gctgcttagt tcttccagcc 240

ttcctcaatg ccagttttat aatatgcagg tctctcccct cagtaatcca ggatggctac 300
tctgatcttt gttgataagg ataacgaaga gccaggcagc cgtttggcat ctaaggatgg 360
attgaagctg ggctctggtg tcaaagcctt agatgggaaa ttgcaggttt caacgccacg 420
agtcggcaaa gtgttcggtg ccccaggctt gcctaaagcc agcaggaagg ctctgggaac 480
tgtcaacaga gttactgaaa agccagtgaa gagtagtaaa cccctgcaat cgaaacagcc 540
gactctgagt gtgaaaaaga tcaccgagaa gtctactaag acacaaggct ctgctcctgc 600
tcctgatgat gcctacccag aaatagaaaa gttcttcccc ttcgatcctc tagattttga 660
gagttttgac ctgcctgaag agcaccagat ctcacttctc cccttgaatg gagtgcctct 720
catgatcctg aatgaagaga gggggcttga gaagctgctg cacctggacc ccccttcccc 780
tctgcagaag cccttcctac cgtgggaatc tgatccgttg ccgtctcctc ccagcgccct 840
ctccgctctg gatgttgaat tgccgcctgt ttgttacgat gcagatattt aaacgtctta 900
ctcctttata gtttatgtaa gttgtattaa taaagcattt gtgtgtaaaa aaaaaaaaaa 960
aaactcgaga gtac 974

<210> 2
<211> 199
<212> PRT
<213> Rattus rattus

<400> 2
Met Ala Thr Leu Ile Phe Val Asp Lys Asp Asn Glu Glu Pro Gly Ser
1 5 10 15
Arg Leu Ala Ser Lys Asp Gly Leu Lys Leu Gly Ser Gly Val Lys Ala
20 25 30
Leu Asp Gly Lys Leu Gln Val Ser Thr Pro Arg Val Gly Lys Val Phe
35 40 45
Gly Ala Pro Gly Leu Pro Lys Ala Ser Arg Lys Ala Leu Gly Thr Val
50 55 60
Asn Arg Val Thr Glu Lys Pro Val Lys Ser Ser Lys Pro Leu Gln Ser
65 70 75 80
Lys Gln Pro Thr Leu Ser Val Lys Lys Ile Thr Glu Lys Ser Thr Lys
85 90 95
Thr Gln Gly Ser Ala Pro Ala Pro Asp Asp Ala Tyr Pro Glu Ile Glu
100 105 110
Lys Phe Phe Pro Phe Asp Pro Leu Asp Phe Glu Ser Phe Asp Leu Pro
115 120 125
Glu Glu His Gln Ile Ser Leu Leu Pro Leu Asn Gly Val Pro Leu Met
130 135 140
Ile Leu Asn Glu Glu Arg Gly Leu Glu Lys Leu Leu His Leu Asp Pro
145 150 155 160
Pro Ser Pro Leu Gln Lys Pro Phe Leu Pro Trp Glu Ser Asp Pro Leu
165 170 175
Pro Ser Pro Pro Ser Ala Leu Ser Ala Leu Asp Val Glu Leu Pro Pro
180 185 190
Val Cys Tyr Asp Ala Asp Ile
195

<210> 3
<211> 779
<212> DNA
<213> Homo sapiens

<400> 3
atggccgcga gttgtggttt aaaccaggag tgccgcgcgt ccgttcaccg cggcctcaga 60

tgaatgcggc tgttaagacc tgcaataatc cagaatggct actctgatct atgttgataa 120
ggaaaatgga gaaccaggca cccgtgtggt tgctaaggat gggctgaagc tggggtctgg 180
accttcaatc aaagccttag atgggagatc tcaagtttca acaccacgtt ttggcaaaac 240
gttcgatgcc ccaccagcct tacctaaagc tactagaaag gctttgggaa ctgtcaacag 300
agctacagaa aagtctgtaa agaccaaggg acccctcaaa caaaaacagc caagcttttc 360
tgccaaaaag atgactgaga agactgttaa agcaaaaagc tctgttcctg cctcagatga 420
tgcctatcca gaaatagaaa aattctttcc cttcaatcct ctagactttg agagttttga 480
cctgcctgaa gagcaccaga ttgcgcacct ccccttgagt ggagtgcctc tcatgatcct 540
tgacgaggag agagagcttg aaaagctgtt tcagctgggc ccccccttcac ctgtgaagat 600
gccctctcca ccatgggaat ccaatctgtt gcagtctcct tcaagcattc tgtcgaccct 660
ggatgttgaa ttgccacctg tttgctgtga catagatatt taaatttctt agtgcttcag 720
agtttgtgtg tatttgtatt aataaagcat tctttaacag ataaaaaaaa aaaaaaaaa 779

<210> 4
<211> 202
<212> PRT
<213> Homo sapiens

<400> 4
Met Ala Thr Leu Ile Tyr Val Asp Lys Glu Asn Gly Glu Pro Gly Thr
 1   5   10   15
Arg Val Val Ala Lys Asp Gly Leu Lys Leu Gly Ser Gly Pro Ser Ile
            20   25   30
Lys Ala Leu Asp Gly Arg Ser Gln Val Ser Thr Pro Arg Phe Gly Lys
        35   40   45
Thr Phe Asp Ala Pro Pro Ala Leu Pro Lys Ala Thr Arg Lys Ala Leu
    50   55   60
Gly Thr Val Asn Arg Ala Thr Glu Lys Ser Val Lys Thr Lys Gly Pro
65   70   75   80
Leu Lys Gln Lys Gln Pro Ser Phe Ser Ala Lys Lys Met Thr Glu Lys
                85   90   95
Thr Val Lys Ala Lys Ser Ser Val Pro Ala Ser Asp Asp Ala Tyr Pro
            100   105   110
Glu Ile Glu Lys Phe Phe Pro Phe Asn Pro Leu Asp Phe Glu Ser Phe
        115   120   125
Asp Leu Pro Glu Glu His Gln Ile Ala His Leu Pro Leu Ser Gly Val
    130   135   140
Pro Leu Met Ile Leu Asp Glu Glu Arg Glu Leu Glu Lys Leu Phe Gln
145   150   155   160
Leu Gly Pro Pro Ser Pro Val Lys Met Pro Ser Pro Pro Trp Glu Ser
                165   170   175
Asn Leu Leu Gln Ser Pro Ser Ser Ile Leu Ser Thr Leu Asp Val Glu
            180   185   190
Leu Pro Pro Val Cys Cys Asp Ile Asp Ile
        195   200

<210> 5
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide.

<400> 5
gatgctctcc gcactctggg aatccaatct g 31

<210> 6
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide.

<400> 6
ttcacaagtt gaggggcgcc cagctgaaac ag 32

<210> 7
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide specific to pCI-neo
plasmid. vector.

<400> 7
ggctagagta cttaatacga ctcactatag gc 32

<210> 8
<211> 31
<212> DNA
<213> Homo sapiens

<400> 8
ctatgtcaca gcaaacaggt ggcaattcaa c 31

<210> 9
<211> 56
<212> PRT
<213> Homo sapiens

<400> 9
```
Met Ile Leu Asp Glu Glu Arg Glu Leu Glu Lys Leu Phe Gln Leu Gly
 1               5                  10                  15
Pro Pro Ser Pro Val Lys Met Pro Ser Pro Pro Trp Glu Ser Asn Leu
            20                  25                  30
Leu Gln Ser Pro Ser Ser Ile Leu Ser Thr Leu Asp Val Glu Leu Pro
        35                  40                  45
Pro Val Cys Cys Asp Ile Asp Ile
    50                  55
```

<210> 10
<211> 168
<212> DNA
<213> Homo sapiens

<400> 10
atgatccttg acgaggagag agagcttgaa aagctgtttc agctgggccc cccttcacct 60
gtgaagatgc cctctccacc atgggaatcc aatctgttgc agtctccttc aagcattctg 120
tcgaccctgg atgttgaatt gccacctgtt tgctgtgaca tagatatt 168

<210> 11
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Anchored primer sequence.

<400> 11
aagctttttt tttttg 16

<210> 12
<211> 13
<212> DNA
<213> Artificial Sequence

<220>
<223> Arbitrary primer sequence.

<400> 12
aagcttgctg ctc 13

<210> 13
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> n = a, g, or c; Anchored primer sequence.

<400> 13
aagctttttt tttttn 16

<210> 14
<211> 194
<212> PRT
<213> Mus musculus

<400> 14
```
Met Ala Thr Leu Ile Phe Val Asp Lys Asp Asn Glu Glu Pro Gly Arg
 1               5                  10                  15
Arg Leu Ala Ser Lys Asp Gly Leu Lys Leu Gly Thr Gly Val Lys Ala
            20                  25                  30
Leu Asp Gly Lys Leu Gln Val Ser Thr Pro Arg Val Gly Lys Val Phe
        35                  40                  45
Asn Ala Pro Ala Val Pro Lys Ala Ser Arg Lys Ala Leu Gly Thr Val
    50                  55                  60
Asn Arg Val Ala Glu Lys Pro Met Lys Thr Gly Lys Pro Leu Gln Pro
65                  70                  75                  80
Lys Gln Pro Thr Leu Thr Gly Lys Lys Ile Thr Glu Lys Ser Thr Lys
```

                85   90   95
Thr Gln Ser Ser Val Pro Ala Pro Asp Asp Ala Tyr Pro Glu Ile Glu
            100   105   110
Lys Phe Phe Pro Phe Asn Pro Leu Asp Phe Asp Leu Pro Glu Glu His
        115   120   125
Gln Ile Ser Leu Leu Pro Leu Asn Gly Val Pro Leu Ile Thr Leu Asn
    130   135   140
Glu Glu Arg Gly Leu Glu Lys Leu Leu His Leu Gly Pro Pro Ser Pro
145   150   155   160
Leu Lys Thr Pro Phe Leu Ser Trp Glu Ser Asp Pro Lys Pro Pro Ser
                165   170   175
Ala Leu Ser Thr Leu Asp Val Glu Leu Pro Pro Val Cys Tyr Asp Ala
            180   185   190
Asp Ile

<210> 15
<211> 945
<212> DNA
<213> Mus musculus

<400> 15
tcttgaactt gttatgtagc aggaggccaa atttgagcat cctcttggct tctctttata 60
gcagagattg taggctggag acagttttga tgggtgccaa cataaactga tttctgtaag 120
agttgagtgt tttatgaccc tggcgtgcag atttaggatc tggattaagc ctgttgactt 180
ctccagctac ttataaattt ttgtgcatag gtgccctggg taaagcttgg tctctgttac 240
tgcgtagttt ttccagccgt ctcaatgcca atattcaggc tctctccctt agagtaatcc 300
agaatggcta ctcttatctt tgttgataag gataatgaag aacccggccg ccgtttggca 360
tctaaggatg ggttgaagct gggcactggt gtcaaggcct tagatgggaa attgcaggtt 420
tcaacgcctc gagtcggcaa agtgttcaat gctccagccg tgcctaaagc cagcagaaag 480
gctttgggga cagtcaacag agttgccgaa aagcctatga agactggcaa acccctccaa 540
ccaaaacagc cgaccttgac tgggaaaaag atcaccgaga agtctactaa gacacaaagc 600
tctgttcctg ctcctgatga tgcctaccca gaaatagaaa agttcttccc tttcaatcct 660
ctagattttg acctgcctga ggagcaccag atctcacttc tccccttgaa tggcgtgcct 720
ctcatcaccc tgaatgaaga gagagggctg gagaagctgc tgcatctggg ccccccctagc 780
cctctgaaga cacccttttct atcatgggaa tctgatccgc tgtactctcc tcccagtgcc 840
ctctccactc tggatgttga attgccgcct gtttgttacg atgcagatat ttaaacttct 900
tacttctttg tagtttctgt atgtatgttg tattaataaa gcatt 945

<210> 16
<211> 56
<212> PRT
<213> Rattus rattus

<400> 16
Met Ile Leu Asn Glu Glu Arg Gly Leu Glu Lys Leu Leu His Leu Asp
1   5   10   15
Pro Pro Ser Pro Leu Gln Lys Pro Phe Leu Pro Trp Glu Ser Asp Pro
            20   25   30
Leu Pro Ser Pro Pro Ser Ala Leu Ser Ala Leu Asp Val Glu Leu Pro
        35   40   45
Pro Val Cys Tyr Asp Ala Asp Ile
    50   55

<210> 17
<211> 56
<212> PRT
<213> Mus musculus

<400> 17
Ile Thr Leu Asn Glu Glu Arg Gly Leu Glu Lys Leu Leu His Leu Gly
 1   5   10   15
Pro Pro Ser Pro Leu Lys Thr Pro Phe Leu Ser Trp Glu Ser Asp Pro
            20   25   30
Leu Tyr Ser Pro Pro Ser Ala Leu Ser Thr Leu Asp Val Glu Leu Pro
        35   40   45
Pro Val Cys Tyr Asp Ala Asp Ile
    50   55

<210> 18
<211> 168
<212> DNA
<213> Rattus rattus

<400> 18
atgatcctga atgaagagag ggggcttgag aagctgctgc acctggaccc cccttccct 60
ctgcagaagc ccttcctacc gtgggaatct gatccgttgc cgtctcctcc cagcgccctc 120
tccgctctgg atgttgaatt gccgcctgtt tgttacgatg cagatatt 168

<210> 19
<211> 168
<212> DNA
<213> Mus musculus

<400> 19
atcaccctga atgaagagag agggctggag aagctgctgc atctgggccc ccctagccct 60
ctgaagacac cctttctatc atgggaatct gatccgctgt actctcctcc cagtgccctc 120
tccactctgg atgttgaatt gccgcctgtt tgttacgatg cagatatt 168

<210> 20
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer 34a

<400> 20
ggagaaccag gcacccgtgt g 21

<210> 21
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer C106F

<400> 21
aaggatgggc tgaagctgg 19

<210> 22
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer C124F

<400> 22
gggtctggac cttcaatcaa agc 23

<210> 23
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer 2-14F

<400> 23
aatgtggctg ttgagagcg 19

<210> 24
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer 3-88F

<400> 24
ggcatccttg tggctaca 18

<210> 25
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer 4-7F

<400> 25
agagagaggc atggatcag 19

<210> 26
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer -5F

<400> 26
ccagaatggc tactctgatc 20

<210> 27
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer 462F

<400> 27
ccccttgagt ggagtgcctc 20

<210> 28
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer C550F

<400> 28
atgccctctc caccatgg 18

<210> 29
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G1-253F

<400> 29
tttaatatta cacgatccta g 21

<210> 30
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G1-245F

<400> 30
tacacgatcc tagtttttc ttcc 24

<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G1-213F

<400> 31
gtgccacaaa gtttgcaaga 20

<210> 32
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G1-145F

<400> 32
tctacttggt gaccacgcc 19

<210> 33
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G1-115F

<400> 33
ctcctgggcg gaagagcc 18

<210> 34
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G1-83F

<400> 34
ttgtggttta aaccaggagt 20

<210> 35
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G2-62F

<400> 35
aaatataaag tgggaccac 19

<210> 36
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G2-53F

<400> 36
gtgggaccac ggtcttag 18

<210> 37
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G2-49F

<400> 37
gaccacggtc ttagatgaat 20

<210> 38
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer G3-33F

<400> 38
cttaaatctg gtcgagagcg 20

<210> 39
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer PTTG1S

<400> 39
ggatccgtaa gcttatggct actctgatct atg 33

<210> 40
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer PTTG2S

<400> 40
ggatccgtgc tactctgatc tacgttg 27

<210> 41
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer PTTG3S

<400> 41
ggatccgtgc tactctgatc tatgttg 27

<210> 42
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer PTTG1-F

<400> 42
cggggatccg tgctactctg atctatgttg 30

<210> 43
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer pBIND-3'F

<400> 43
tgaggtacct gaagatctaa ggcc 24

<210> 44
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer pTargeT-3'F

<400> 44
taaatctttc ccgggggtac c 21

<210> 45
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer 601b

<400> 45
cggggatccg tgctactc 18

<210> 46
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer 601b

<400> 46
ctatgtcaca gcaaacaggt ggc 23

<210> 47
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer C233R

<400> 47
gcctttctgg tagctttagg taa 23

<210> 48
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer C481R

<400> 48
gaggcactcc actcaagggg 20

<210> 49
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer C525R

<400> 49
ctgaaacagc ttttcaagct 20

<210> 50
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer 2-306R

<400> 50
gcttggctgt ttttgttttc t 21

<210> 51
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer 3-434R

<400> 51
aggtcaaaac tctcgaagc 19

<210> 52
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer 4-282R

<400> 52
tccgttgatc tttactcacg 20

<210> 53
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer 653R

<400> 53
taaatatcta tgtcacagca aacagg 26

<210> 54
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer G3-679R

<400> 54
cacaaactct aaagcactaa g 21

<210> 55
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer PTTG1AS

<400> 55
ggtaccttaa atatctatgt cacagc 26

<210> 56
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer PTTG2AS

<400> 56
ggtaccacat ccagggtcga cagaatg 27

<210> 57
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer PTTG3AS

<400> 57
ggtaccaata tctatgtcac agcaaac 27

<210> 58
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer pBIND-5'R

<400> 58
cacggatccc cgggaattc 19

<210> 59
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer G2-Ctail.R

<400> 59
gcttgaagga gatctcaaaa cag 23

<210> 60
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer PTTG2-R

<400> 60
tcaggtacct caacatccag ggtc 24

<210> 61
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer PTTG3-R

<400> 61
tcaggtacct caaatatcta tgtc 24

<210> 62
<211> 1231
<212> DNA
<213> Homo sapiens

<400> 62
ataaattaga aaatgcaata acggcagaaa tctttcttta ttggttgctc tgccctttac 60
ctaagtggtt tttgaccatt taacaatgtg taagagttgg gttttacctc cattttatgg 120
atgtggaaat agggcttgga tgttagctaa cttgcccaaa tcttacagct aacagaaagt 180
ggtactcccg agattcctac ccaggtttgt ctgacctcag gcctgtgctc tttatatgag 240
ttcatgctaa ctctcagatg atgtgctagg cacaaaaatt agatattaca ccaatttcca 300
ctatagttaa cattctatct aaatataaag tgggaccacg gtcttagatg aatgtggctg 360
ttgagagcgg caataatcca gaatggctac tctgatctac gttgataagg aaattggaga 420
accaggcacc cgtgtggctg ccaaggatgt gctgaagctg gagtctagac cttcaatcaa 480
agcattagat gggatatctc aagttttaac accacgtttt ggcaaaacat acgatgctcc 540
atcagcctta cctaaagcta ccagaaaggc tttgggcact gtcaacagag ctacagaaaa 600
gtcagtaaag accaatggac ccagaaaaca aaaacagcca agcttttctg ccaaaaagat 660
gaccgagaag actgttaaaa caaaaagttc tgttcctgcc tcagatgacg cctatccaga 720
aatagaaaaa ttctttccct tcaatcttct agactttgag agttttgacc tgcctgaaga 780
gcgccagatt gcacacctcc ccttgagtgg agtgcctctc atgatccttg atgaggaggg 840
agagcttgaa aagctgtttc agctgggccc cccttcacct gtgaaaatgc cctctccacc 900
atgggaatgc aatctgtttg cagtctcctt caagcattct gtcgaccctg gatgttgaat 960
tgccagctgt ttgctatgac atagatattt aaatttctta gtgctttgga gtttgtgtgt 1020
acttgtatta ataaagcatt atttgtttaa caacataata aatacataaa tataaagtgg 1080
gtcatattcc tctttatgtg catctgtctc agctgtccct tgtttctata tttcttccat 1140
actacagccc gtactctttg ggatatgtc aacatgattt acttctgtag agaaacagga 1200
gacaggaaat agcaaaggat aaaggagaaa a 1231

<210> 63
<211> 576
<212> DNA
<213> Homo sapiens

<400> 63
atggctactc tgatctacgt tgataaggaa attggagaac caggcacccg tgtggctgcc 60
aaggatgtgc tgaagctgga gtctagacct tcaatcaaag cattagatgg gatatctcaa 120
gttttaacac cacgttttgg caaaacatac gatgctccat cagccttacc taaagctacc 180
agaaaggctt tgggcactgt caacagagct acagaaaagt cagtaaagac caatggaccc 240
agaaaacaaa aacagccaag cttttctgcc aaaaagatga ccgagaagac tgttaaaaca 300
aaaagttctg ttcctgcctc agatgacgcc tatccagaaa tagaaaaatt ctttcccttc 360
aatcttctag actttgagag ttttgacctg cctgaagagc gccagattgc acacctcccc 420
ttgagtggag tgcctctcat gatccttgat gaggagggag agcttgaaaa gctgtttcag 480
ctgggccccc cttcacctgt gaaaatgccc tctccaccat gggaatgcaa tctgtttgca 540
gtctccttca agcattctgt cgaccctgga tgttga 576

<210> 64
<211> 191
<212> PRT
<213> Homo sapiens

<400> 64
Met Ala Thr Leu Ile Tyr Val Asp Lys Glu Ile Gly Glu Pro Gly Thr

```
1               5                   10                  15
Arg Val Ala Ala Lys Asp Val Leu Lys Leu Glu Ser Arg Pro Ser Ile
            20                  25                  30
Lys Ala Leu Asp Gly Ile Ser Gln Val Leu Thr Pro Arg Phe Gly Lys
        35                  40                  45
Thr Tyr Asp Ala Pro Ser Ala Leu Pro Lys Ala Thr Arg Lys Ala Leu
    50                  55                  60
Gly Thr Val Asn Arg Ala Thr Glu Lys Ser Val Lys Thr Asn Gly Pro
65                  70                  75                  80
Arg Lys Gln Lys Gln Pro Ser Phe Ser Ala Lys Lys Met Thr Glu Lys
                85                  90                  95
Thr Val Lys Thr Lys Ser Ser Val Pro Ala Ser Asp Asp Ala Tyr Pro
            100                 105                 110
Glu Ile Glu Lys Phe Phe Pro Phe Asn Leu Leu Asp Phe Glu Ser Phe
        115                 120                 125
Asp Leu Pro Glu Glu Arg Gln Ile Ala His Leu Pro Leu Ser Gly Val
    130                 135                 140
Pro Leu Met Ile Leu Asp Glu Glu Gly Glu Leu Glu Lys Leu Phe Gln
145                 150                 155                 160
Leu Gly Pro Pro Ser Pro Val Lys Met Pro Ser Pro Pro Trp Glu Cys
                165                 170                 175
Asn Leu Phe Ala Val Ser Phe Lys His Ser Val Asp Pro Gly Cys
            180                 185                 190
```


<210> 65
<211> 1305
<212> DNA
<213> Homo sapiens

<400> 65

```
ccagatttct ggaaataaag atctactaag aaatgaagag cacttgaaat agtaacaaca 60
gaactaaaca tattttgatt ttttaataat ttaaatctct aaaagttaac aaacaagaat 120
agtaataact tatggtgggt ttatatctaa tgtatcagta aaatatatga caacagtatt 180
ataaaagcta gcattagaga catggaagta taccattgta agacatatcc tataagtgta 240
agtattctat aagtgatgtg gtataattca aatgaagata gactgtaata aattaaagat 300
atatacttaa atctggtcga gagcggcaat aatccagaat ggctactctg atctatgttg 360
ataaggaaaa cgaagaacca ggcatccttg tggctacaaa ggatgggctg aagctggggt 420
ctggaccttc aatcaaagcc ttagatggga gatctcaagt ttcaatatca tgttttggca 480
aaacattcga tgctcccaca tccttaccta aagctaccag aaaggctttg ggaactgtca 540
acagagctac agaaaagtca gtaaagacca atggacccct caaacaaaaa cagccaagct 600
tttctgccaa aaagatgact gagaagactg ttaaagcaaa aaactctgtt cctgcctcag 660
atgatggcta tccagaaata gaaaaattat ttcccttcaa tcctctaggc ttcgagagtt 720
ttgacctgcc tgaagagcac cagattgcac atctcccctt gagtgaagtg cctctcatga 780
tacttgatga ggagagagag cttgaaaagc tgtttcagct gggcccccct tcacctttga 840
agatgccctc tccaccatgg aaatccaatc tgttgcagtc tcctttaagc attctgttga 900
ccctggatgt tgaattgcca cctgtttgct ctgacataga tatttaaatt tcttagtgct 960
ttagagtttg tgtatatttc tattaataaa gcattatttg tttaacagaa aaaaagatat 1020
atacttaaat cctaaaataa aataaccatt aaaaggaaaa acaggagtta taactaataa 1080
gggaacaaag gacataaaat gggataataa tgcttaatcc aaaataaagc agaaaatgaa 1140
gaaaaatgaa atgaagaaca gataaataga aaacaaatag caatatgaaa gacaaacttg 1200
accgggtgtg gtggctgatg cctgtaatcc cagcactgtg ggaggctgag gcaggcggat 1260
cacctgaggt cgggagtctg agaccagcct caccaacatg gagaa                 1305
```

<210> 66

<211> 609
<212> DNA
<213> Homo sapiens

<400> 66
atggctactc tgatctatgt tgataaggaa aacgaagaac caggcatcct tgtggctaca 60
aaggatgggc tgaagctggg gtctggacct tcaatcaaag ccttagatgg gagatctcaa 120
gtttcaatat catgttttgg caaaacattc gatgctccca catccttacc taaagctacc 180
agaaaggctt tgggaactgt caacagagct acagaaaagt cagtaaagac caatggaccc 240
ctcaaacaaa aacagccaag cttttctgcc aaaaagatga ctgagaagac tgttaaagca 300
aaaaactctg ttcctgcctc agatgatggc tatccagaaa tagaaaaatt atttcccttc 360
aatcctctag gcttcgagag ttttgacctg cctgaagagc accagattgc acatctcccc 420
ttgagtgaag tgcctctcat gatacttgat gaggagagag agcttgaaaa gctgtttcag 480
ctgggccccc cttcaccttt gaagatgccc tctccaccat ggaaatccaa tctgttgcag 540
tctcctttaa gcattctgtt gaccctggat gttgaattgc cacctgtttg ctctgacata 600
gatatttaa 609

<210> 67
<211> 202
<212> PRT
<213> Homo sapiens

<400> 67
Met Ala Thr Leu Ile Tyr Val Asp Lys Glu Asn Glu Glu Pro Gly Ile
1 5 10 15
Leu Val Ala Thr Lys Asp Gly Leu Lys Leu Gly Ser Gly Pro Ser Ile
20 25 30
Lys Ala Leu Asp Gly Arg Ser Gln Val Ser Ile Ser Cys Phe Gly Lys
35 40 45
Thr Phe Asp Ala Pro Thr Ser Leu Pro Lys Ala Thr Arg Lys Ala Leu
50 55 60
Gly Thr Val Asn Arg Ala Thr Glu Lys Ser Val Lys Thr Asn Gly Pro
65 70 75 80
Leu Lys Gln Lys Gln Pro Ser Phe Ser Ala Lys Lys Met Thr Glu Lys
85 90 95
Thr Val Lys Ala Lys Asn Ser Val Pro Ala Ser Asp Asp Gly Tyr Pro
100 105 110
Glu Ile Glu Lys Leu Phe Pro Phe Asn Pro Leu Gly Phe Glu Ser Phe
115 120 125
Asp Leu Pro Glu Glu His Gln Ile Ala His Leu Pro Leu Ser Glu Val
130 135 140
Pro Leu Met Ile Leu Asp Glu Glu Arg Glu Leu Glu Lys Leu Phe Gln
145 150 155 160
Leu Gly Pro Pro Ser Pro Leu Lys Met Pro Ser Pro Pro Trp Lys Ser
165 170 175
Asn Leu Leu Gln Ser Pro Leu Ser Ile Leu Leu Thr Leu Asp Val Glu
180 185 190
Leu Pro Pro Val Cys Ser Asp Ile Asp Ile
195 200

<210> 68
<211> 1142
<212> DNA
<213> Homo sapiens

<400> 68
aaaaacatta aagctgaagg ggcaacttca aatacctcct ttattaagat aaacaaaagt 60
agtttttcca actacttaga aatgtaatgt ctcaaattct actcttttca tcattcaggg 120
gtatgtcatg ggttgaattg tggccccaaa aaagatatag tgaagtcctc agaatgtgac 180
catgtttgga aataggcttg ttagagatgt gattagtcag gataaggtcc tactggagca 240
gagtgggccc ctaacccaat atgactggtg tccatacaag aagacacaga cacacaggaa 300
gaacaccata tggagatgga acactgcaga gacgcatcca caagccaagg aatgcctggg 360
gctactagaa gcaaagagag aggcatggat cagattctcc cccagaagga acccaccctg 420
ctctgatcta tgttgataag gagaatggag aaccaggtat ccatgcagct cctaaagata 480
ggctgaagct gggatctgga ccttcaatca aagccttaga ggggagatct caagtttcag 540
caccacgtgt tggcaaaatg tccaatgctt taccagcctt acctaaagct accagaaagt 600
cttttggaac tgtcaacagg gctacagaaa cgtgagtaaa gatcaacgga ctcctcaaac 660
taaaacaccc aaatttctct gccgaaaaga tgaccaggaa gactgttaaa gcaaaaagct 720
ctgttccttc ctcagataat gcctacccag aaatagaaaa attatttcac ttcaatcttc 780
tagattttga gagttttaac caacctgaag tgcaccagat tgcaggcctc cccttgagtg 840
gagtgcctct tatgatcctt gataaggaga gagagcttga aaagctgttt cagctgggcc 900
cgccttcgcc tgtgaagatg ccctctccgc catgggaacc caatctgttg cagtgtcctt 960
caacccttct gttgaccctg gatgttgaat tgccacctgt ttactatgac ataaatattt 1020
aaatttcttc atgctttagg gtttgtgtgt atttgtayta ataaagcatt ctttaacagg 1080
aaaaaaaaaa ctcaccctgc taacacctta atttggaact tccacctcca gactgtgaga 1140
ca 1142